

### REMARKS

The present application has been reviewed in light of the Office Action dated January 28, 2008. Claims 1-13 and 27 are presented for examination, of which Claims 1 and 27 are in independent form. Claims 14-26 have been canceled, without prejudice or disclaimer of subject matter, because these claims have been deemed to be directed to a non-elected invention. New Claim 27 has been added in an effort to obtain a more complete scope of protection. Claims 1-6 and 8-13 have been amended to define Applicant's invention more clearly. Favorable consideration is requested.

The Office Action states that Claims 1-12 are rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 6,084,273 (Hirota); and that Claim 13 is rejected under § 103(a) as being unpatentable over Hirota. Applicant respectfully traverses the rejections and submits that independent Claims 1 and 27, together with the claims dependent therefrom, are patentably distinct from Hirota for at least the following reasons.

Claim 1 is directed to a photoelectric conversion device that includes a plurality of photoelectric conversion regions, a plurality of electrodes, and a plurality of amplifying field effect transistors. Each of the plurality of photoelectric conversion regions has a first semiconductor region for accumulating electric charges that correspond to incident light. Each of the plurality of electrodes is arranged at a side of a corresponding first semiconductor region for transferring a signal charge from the first semiconductor region. Each of the plurality of amplifying field effect transistors receives a signal charge from a corresponding photoelectric conversion region inputted by a corresponding electrode.

Among the notable features of Claim 1 are that each first semiconductor region is

surrounded by a potential barrier region, and that a nick region is formed in a part of each potential barrier region and is arranged at a side different from a side at which a corresponding electrode is arranged. Additionally, a source or drain region of each field effect transistor is placed adjacent to a corresponding nick region, and the source or drain region has a same conductivity type as a conductivity type of the first semiconductor regions

Hirota relates to an MIS device that can be set in an analog manner. Apparently, Hirota teaches that the MIS device can be controlled by the amount of electric charges injected into a nitride film of a laminated gate electrode structure.

The Office Action alleges that Hirota, at reference numeral 91 in Fig. 12, discloses a plurality of amplifying field effect transistors into which signal charges are inputted. However, Hirota describes reference numeral 91 to be a bias circuit for supplying a voltage to adjust a reset gate electrode 82 of a CCD solid-state imaging device (i.e., to adjust a DC bias), and does not describe or suggest that the bias circuit performs amplification. (See column 13, lines 54-58.) In fact, Hirota discusses the bias circuit 91 in at least the portion from column 11, line 61, to column 15, line 3. It is respectfully submitted that nowhere in Hirota is there even a suggestion that the bias circuit 91 is one of “a plurality of amplifying field effect transistors, each field effect transistor receiving a signal charge from a corresponding photoelectric conversion region inputted by a corresponding electrode,” as claimed in Claim 1.

Further, the Office Action alleges that Hirota, at reference numeral 81 in Fig. 10, discloses a source or drain region adjacent to a nick region, and further alleges that the region between reference numerals 50 and 54 in Fig. 8 corresponds to a nick region. However, even if reference numeral 81 is a source or drain region and even if the region between reference

numerals 50 and 54 is a nick region, Hirota nevertheless fails to show or suggest that the region of 81 is adjacent to the region between 50 and 54. Applicant notes that Fig. 8 of Hirota is a sectional view along “VIII” in Fig. 7, and Fig. 10 of Hirota is a sectional view along “IX” in Fig. 7. As evident from Fig. 7, the sectional views of Figs. 8 and 10 are not adjacent to each other and therefore the region of 81 cannot be adjacent to the region between 50 and 54.

Moreover, the Office Action alleges that reference numeral 86 in Fig. 10 of Hirota corresponds to two photodiodes. However, Hirota describes reference numeral 86 to denote a protecting device with two diodes connected in series (see lines 1-22 in column 11). This protecting device 86 is for suppressing the application of an electrostatic voltage to a gate electrode 85 even when the electrostatic voltage is applied to an external terminal 87. That is, the protecting device 86 is a diode circuit for preventing an electrostatic breakdown, and is not a photodiode having a nick region. Thus, it is respectfully submitted that Hirota does not show or suggest a source or drain region adjacent to a nick region, such that “a source or drain region of each field effect transistor is placed adjacent to a corresponding nick region, said source or drain region having a same conductivity type as a conductivity type of said first semiconductor regions,” as claimed in Claim 1.

In summary, nothing has been found in Hirota that is believed to teach or suggest a photoelectric conversion device that includes “a plurality of photoelectric conversion regions, each photoelectric conversion region having a first semiconductor region for accumulating electric charges that correspond to incident light,” and “a plurality of electrodes, each electrode being arranged at a side of a corresponding first semiconductor region for transferring a signal charge from said first semiconductor region,” and “a plurality of amplifying field effect

transistors, each field effect transistor receiving a signal charge from a corresponding photoelectric conversion region inputted by a corresponding electrode,” wherein “each first semiconductor region is surrounded by a potential barrier region, a nick region is formed in a part of each potential barrier region and is arranged at a side different from a side at which a corresponding electrode is arranged, and a source or drain region of each field effect transistor is placed adjacent to a corresponding nick region, said source or drain region having a same conductivity type as a conductivity type of said first semiconductor regions,” as recited in Claim 1. Accordingly, Applicant submits that Claim 1 is not anticipated by Hirota and respectfully requests withdrawal of the rejection under 35 U.S.C. § 102(b).

Independent Claim 27 includes some features similar to those of Claim 1 discussed above, and therefore Claim 27 is believed to be patentable for at least the reasons discussed above. The other claims in the present application depend from Claim 1 and therefore are submitted to be patentable for at least the same reasons. Because each dependent claim also is deemed to define an additional aspect of the invention, individual consideration of the patentability of each claim on its own merits is respectfully requested.

In view of the foregoing amendments and remarks, Applicant respectfully requests favorable consideration and an early passage to issue of the present application.

No petition to extend the time for response to the Office Action is deemed necessary for this Amendment. If, however, such a petition is required to make this Amendment timely filed, then this paper should be considered such a petition and the Commissioner is authorized to charge the requisite petition fee to Deposit Account 06-1205.

### CONCLUSION

Applicant's undersigned attorney may be reached in our New York office by telephone at (212)218-2100. All correspondence should continue to be directed to our address given below.

Respectfully submitted,

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